Academic Self-Handicapping: Prevalence and its Impact on Engagement with Academic Supports in a Tertiary Environment

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I declare that this report is my own original work and that contribution of others have been duly acknowledge.

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Abstract

Self-handicapping has been documented to have strong positive correlations with disengagement from learning, poor adjustment, and academic underachievement. The present longitudinal study investigated changes in self-handicapping strategies in response to evaluative threat and changes to study load during university students' first semester study, and its impact on engagement with academic supports. The hypothesis indicating that self-handicapping behaviour would change over time was not supported, however participants who reported low protective factors associated with poor academic achievement scored higher on self-handicapping measures than those whose scores reflected high protective factors associated with academic achievement. As expected, high self-handicappers invested less time in personal study but only for core units associated with meeting the requirements to completing one's degree. No significant differences between high and low self-handicappers were observed with engagement with support programs, however the direction of these means were counterintuitive to those originally hypothesised with high self-handicappers attending more Peer Assisted Study Sessions (PASS) core to their degree than low self-handicappers. It was concluded that self-handicapping strategies were stable within a semester of study, with evidence that university resources should be directed towards supports and interventions implemented early within the first semester of study.

Introduction

The first year of undergraduate study has been identified as a critical period for commencing students, as the first year of students' learning and classroom experience form the foundations of their future learning outcomes. Students transitioning through this period appear to be in need of greater support to successfully adapt to the new academic work environment and lifestyle. As a result, tertiary institutions have targeted the first year experience and transition to tertiary study by increasing preparedness, scholarships and financial support, mentoring and peer and interaction, quality teaching, and assessment for learning (Purnell, McCarthy, & McLeod, 2010). Despite increased attention and resources dedicated to the first-year student transition, approximately 80000 Australian students (17.31% of all enrolments) withdrew from university studies within their first year (Department of Education and Training, 2013). The large number of students not completing their first year of study negatively impacts universities in terms of reputation, income to develop further supports and provide resources; the individual's occupational skills, satisfaction and income; and reflects poorly on the government's use of funding in the tertiary education sector (Birch & Miller, 2007; Bradley, Noonan, Nugent & Scales, 2008).

Research conducted within the tertiary education sector has been primarily focused on the relationship between entrance scores and academic success (Birch & Miller, 2007; Dancer & Fiebig, 2004; Dobson & Skuja, 2005). Findings from this research have consistently indicated university entrance scores to be the single best predictor of student success of tertiary study, with selection rank accounting for approximately 11% of variance in predicting final GPA. Although these findings have been useful in identifying individual factors that influence tertiary engagement,

retention and academic success of high school leavers, a drive to increase Australians' university participation has resulted in an ever increasingly diverse population that do not enter university with a traditional entrance score. These emerging demographics include non-year 12 applicants and international students. In 2014, 44% (N = 275, 410) of the total applications received by Australian Tertiary Admissions Centres (Department of Education, 2014) were non-year 12 applicants. Unlike traditional year 12 applicants, non-traditional students' and international students prior academic achievement may not be as easily standardized as their year 12 leaver counterparts and thus entrance score may no longer be the single best predictor of engagement and performance in first-year university students (Palmer, Bexley, & James, 2011).

As university enrolments grow not only in sheer size but also diversity, other behavioural and cognitive factors shared by students, not limited to selection rank, may be just as or more effective in accounting for students' motivation, engagement, retention and academic success. Furthermore, unlike entrance scores which are a set demographic factor, behavioural and cognitive factors change naturally over a period of time and can also be addressed through structured programs and interventions. This growing area of research has stressed the significance of fostering a level of motivation and reducing disengagement behaviours, particularly during students' first year of study, to ensure students engage and succeed academically (McKenzie & Schweitzer, 2001; Wurf & Piggins, 2011). The concept of fostering motivation and engagement is especially true at rural campuses which cater for a group of students that are often perceived to be academically vulnerable (Levy & Campbell, 2008). Rural institutions aim to teach students from rural backgrounds and facilitate skills development that are conducive to employment opportunities within their

communities. Unfortunately, rural students at a primary and secondary level typically lag behind their metropolitan peers in attendance, reading and numeracy and educational aspirations (Victorian Auditor-General's Report, 2014). These students continue to face financial, social and logistic barriers in their pursuit of higher education, both tertiary and vocational. As a result of these cumulative disadvantages, students from these backgrounds experience greater distress, anxiety, loneliness, and culture shock when transitioning to university and often face difficulties in engaging with the different styles of learning and teaching required at a tertiary institution (AMSA Student Mental Health and Wellbeing Committee, 2013).

Despite the fact research regarding tertiary student motivation and engagement continues to grow, a large proportion utilises custom engagement and motivation scales. It is difficult to apply these particular findings across institutions both domestically and internationally, as this avenue of investigation is often orientated towards a specific course population at a tertiary institute. These investigations and scales can vary in the degree of theoretical grounding, rely on qualitative analysis, be retrospective in nature, or do not provide sufficient data for interpretation and generalization (Kahu, 2013). These methodological issues not only limited to the assessment of student motivation and engagement with prescribed units but also when investigating students engagement in academic support programs (Dawson, van de Meer, Skalicky & Cowley, 2014; Fayowksi & MacMillan, 2008). Evaluation of student learning and social support programs is particularly important in the face of tertiary sector reform, a reduction of funding, and a loss of both professional and academic roles across Australia. These supports are a form of intervention to reduce student disengagement both with their study and the university

as an institution, and to enhance academic success. Whilst there is a handful of studies using qualitative analysis to understand patterns of engagement between attendees and non-attendees with academic support programs, there are few methodologically sound, and replicable studies conducted to effectively evaluate retention and the success of engagement programs.

Further to these studies detriment, many do not consider or account for changes that may occur within a semester of study such as a change to an individual's social support network, financial support to study at university, work commitments, motivation or ability to cope with larger workloads associated with mid and late semester. This is despite the fact that changes in engagement patterns are observed in lectures, classes and student learning and social support programs decline across a semester (James, Krause & Jennings, 2010). Disregarding this factor may result in the inefficient allocation of limited monetary resources into student support programs incorrectly targeting particular aspects of student motivation and engagement across the semester. Whilst absenteeism alone is not the primary concern, as attendance in courses is not a learning outcome, it is a symptom of a larger problem faced by policy makers and academics - the declining engagement with learning by students (Sawon, Pembroke & Wille, 2012).

One factor which is documented to have a strong positive correlation with disengagement from learning, poor adjustment and academic underachievement is the maladaptive behavioural practice of self-handicapping. Self-handicapping university students create obstacles to academic performance (Berglas & Jones, 1978, Rhodewalt, 1994) in order to protect themselves from the negative implications associated with failure. These include, but are not limited to, students blaming poor academic performance on engagement with other non-academic

activities that reduce their time to study, or not engaging in learning skills support programs because they feel they have little time to do so (Berglas & Jones, 1978; Kearns, Forbes, Gardiner & Marshall, 2007). Students can engage in self-handicapping strategies both before and after the assessment of skill or ability has been conducted, and attribute their potential or actual failure to factors external to themselves. By rendering feedback from assessments of learning and skill competency as ambiguous students continue to perceive themselves as competent (Snyder, Malin, Dent, & Garcia, 2014). Whilst there are theoretical frameworks, qualitative analysis, and experimental studies demonstrating the relationship between self-handicapping behaviour and aspects of motivation and engagement, there are a lack of studies clearly mapping self-handicapping behaviour across a semester of study. Arguably as self-handicapping is a proactive, or before-the-event strategy, it is important that more research is conducted to understand whether self-handicapping strategies remain consistent or fluctuate over the course of a semester of study. As such, the present study aimed to (a) investigate motivation and engagement in a systematic and replicable way across first semester of students' study, (b) assess the behavioural changes of self-handicapping that occur within students' first semester of university study, and (c) its impact on engagement with academic supports.

Student Motivation and Engagement

Although motivation and engagement are two independent constructs, the literature also emphasises the overlap and connection between them. To date, research conducted within the tertiary education sector has defined student motivation and engagement as a student's energy and drive to learn, achieve and work effectively to their potential, in addition to engaging in behaviours that

promote academic success (Martin, 2007; Martin 2009). It is clear from such research that the levels of engagement and motivation required by students at a tertiary level are beyond those of students at a secondary level. At a tertiary level, students not only need the drive to regularly attend classes and complete assessments, but also need to actively engage in their learning independently, and question and transmit ideas (Levy & Campbell, 2008; Pintrich, Smith, Garcia & McKeachie, 1993).

Fredrick and McColskey's (2012) systematic review of student engagement research identified that models of student motivation and engagement include either two-, three-, or four- factors. The common dimensions identified across research include behavioural, cognitive, emotional, socio-cultural and affective engagement, though the combination of factors may vary between models. While researchers agree student engagement is important, there is debate over the exact nature of engagement and how it can be consistently measured in relation to student outcomes (Richardson, Abraham & Bond, 2012; Skinner, Furrer, Marchand & Kinderman, 2008). The absence of a robust measure for engagement is concerning due to the fact that government and institutions have become increasingly more reliant on engagement data to measure student outcomes, and in some cases, act as a proxy for the measurement of teaching and learning quality (ACER, 2010; Coates, 2005).

One popular two-factor model which attempts to systematically encompass the multidimensional nature of student motivation and engagement is the Motivation and Engagement Wheel. The two overarching factors identified by the model are behavioural and cognitive. The Motivation and Engagement Wheel also differentiates between higher-order factors representing both adaptive and impeding

cognitive and behavioural dimensions of achievement and the more specific first-order factors within these dimensions (See Figure 1) (Martin, 2007).

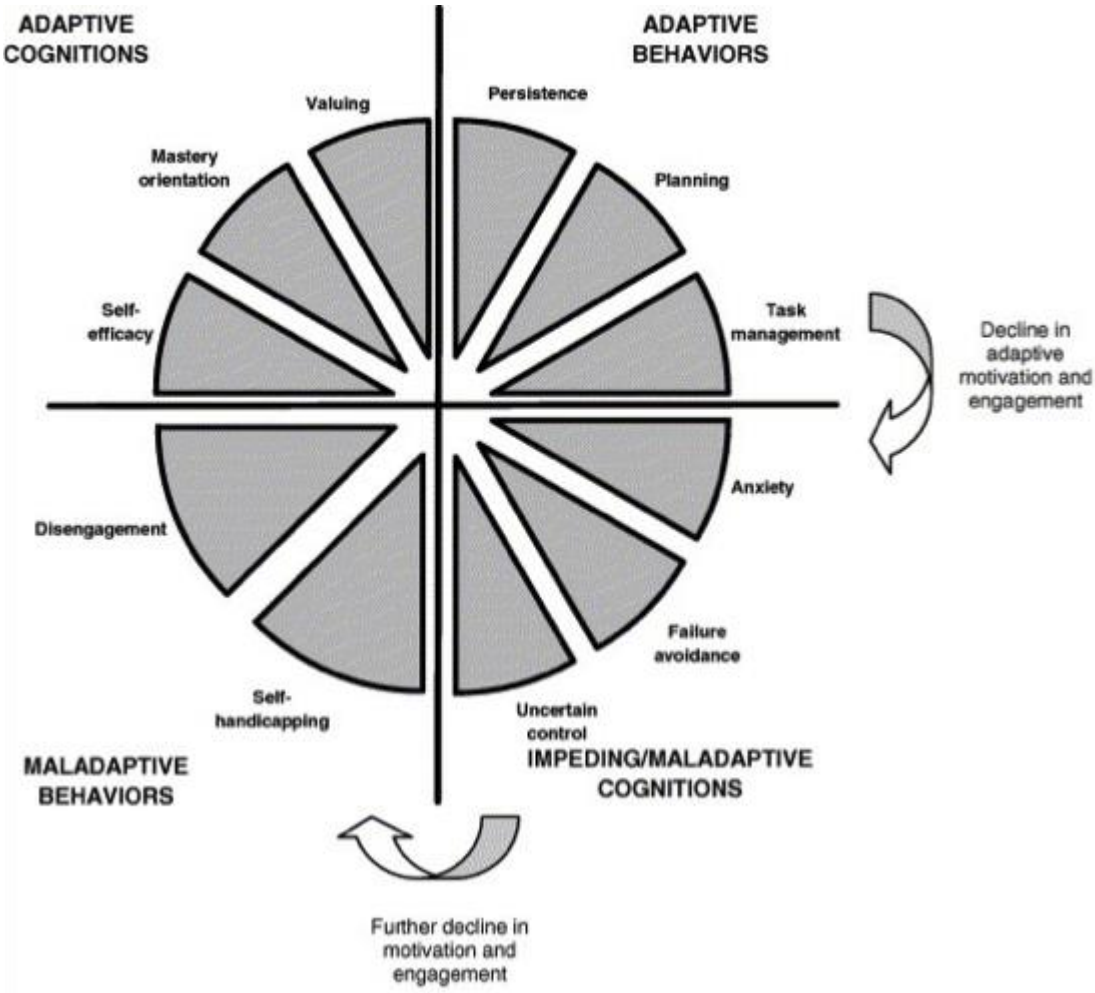

Figure 1. The Motivation and Engagement Wheel (Martin, 2007).

The Motivation and Engagement Wheel has been applied in the literature to assess moderating and mediating factors of student motivation and academic success and more specifically the correlation between first-order factors and academic success measured by GPA, final mark or arbitrary test results (Marks, 2007; Martin, 2009; Palmer et al., 2011; Wurf & Piggins, 2014). An example of this can be seen in Wurf and Piggins' (2014) study investigating pre-service teachers' motivation and academic success. The application of the Motivation and Engagement Scale –

University & Colleges measure demonstrated significant correlations between self-reported adaptive behaviours and Grade Point Average (GPA) (r = .50, p < .001). The study by Wurf and Piggins (2014) also demonstrated the relationship between factors, for example the MES-UC adaptive behaviours also demonstrated significant moderate negative correlations with MES-UC maladaptive behaviours (r = -39, p <.001), emphasizing the importance in controlling for these relationships.

Whilst the most prominent approach to investigating motivation and engagement is through the utilisation of the scale associated with this two-factor model, MES-UC, this tool alone does not allow for analysis of other factors related to student motivation and engagement. This is despite the fact that meta-analysis has demonstrated that larger models controlling for factors such as personality (Busato, Prins, Elshout & Hamaker, 1998), demographic variables (Krause, Hartley, James & McInnis, 2005; McKenzie & Schweitzer, 2001), socio-cultural (Smyth, Mavor, Platow, Grace & Reynolds, 2013) or affective engagement (Krause & Coates, 2008) may be the most effective way in predicting academic success and retention at a tertiary level (Marks, 2007). For example, Trapmann, Hell, Hirn and Schuler's (2007) review of the 'big five' personality traits demonstrated a range of correlations associated with grades, retention and academic satisfaction. Of the personality traits, conscientiousness was found to have moderate positive correlations with grades (r = .269). Neuroticism was also found to be negatively associated with academic satisfaction (r = - .369) whilst extraversion was found to have weak positive associations with academic satisfaction (r = .102). These traits not only are related to academic satisfaction and success but are also related to first order factors identified in the motivation and engagement wheel. A range of independent studies investigating academic self-handicapping, one of the factors captured by the MES-

UC, have demonstrated moderate to strong positive correlations with negative variables such as perfectionism (Sadler & Buley, 1999), personality characteristics (Steel, 2007), academic procrastination (Meyer, 2000), depression and anxiety (Leondari & Gondia, 2007), failure avoidance, and low self-esteem (Rhodewalt & Hill, 1995; Thomas & Gadbois, 2007). Students who have a greater presence of personality, social, behavioural and cognitive traits negatively associated with academic success may be less protected from the difficulties associated with tertiary study.

As a result of the variety of institution specific, unreliable, and non-empirical approaches used, studies have reported a range of inconsistent findings between student-level factors and academic success, retention and engagement (Richardson et al., 2008). Utilising reliable and valid measures of these factors in conjunction to the MES-UC may not only provide a detailed analysis of the factors contributing to academic engagement, motivation and success but also provide insight into the relationship between the cognitive, behavioural, affective, demographic, socio-cultural and personality factors and how these relationships may change or remain static across a period of time (Kahu, 2013; Krause et al., 2005), and resultantly influence academic motivation, engagement and performance.

In addition to the variability of scales employed, the methodological approaches used in this field of research are often cross-sectional in nature or rely on data collected at one point in time (Huang, 2011; Liem & Martin, 2012), counterintuitive to the definition of motivation and engagement which is defined to be dynamic. This is despite the fact longitudinal analysis has been found to be superior in modelling changes over time in academic settings (Busato, Prins, Elshout & Hamaker, 2011). A three-way longitudinal investigation of Korean adolescents'

perceptions of teacher autonomy, need satisfaction and engagement revealed that the effect of perceived autonomy support early in semester predicted mid-semester needs satisfaction, which, in turn predicted end of semester engagement and academic success (Jang & Kim, 2012). This style of analysis revealed dynamic changes in students' cognitions that would not have otherwise been observed using traditional cross-sectional methodologies. A similar longitudinal approach with the MES-UC may clarify previously inconsistent findings regarding the presence of first-order factors and the relationship between factors at varying points across students' first semester of study (Schwinger, Wirthwein, Lemmer & Steinmayr, 2014). This style of analysis is particularly important for analysing factors such as self-handicapping behaviours that may not be present at the commencement of semester where threats to one's self-concept is minimal, but become more prominent when academic assessment demands increase.

Academic Self-Handicapping

Developmental and personality theorists (c.f. Bong & Skaalvik, 2003) agree that individuals' academic self-concept is an important factor in understanding how students perceive themselves, engage and achieve academically. This includes their perception of their own attributes, the way in which they believe they are perceived by others, the view they have of how they compare to others, and what they believe they are capable of achieving within an academic setting (Berglas & Jones, 1978; Snyder & Smith, 1982). The construction and maintenance of individuals' academic self-concept continues to develop across their lifespan, however the strategies employed for this development can vary in consequence. In particular, academic self-handicapping is a behavioural strategy utilized when there is a mismatch between one's self-concept and an academic goal (Rhodewalt & Tragakis, 2002).

Academic self-handicappers externalise (or excuse) failures and internalise success to protect their self-concept by taking advantage of the attributional principles of discounting and augmentation (Berglas & Jones, 1978; Kelley, 1972). In the context of higher education, students are often faced with assessments of their ability and competence such as examinations and assignments (Zuckerman & Tsai, 2005; Rhodewalt & Tragakis, 2002). Uncertainty about one's ability may prompt students to self-handicap, protecting their self-esteem and influencing others' evaluations of themselves, e.g. "*I failed the exam because I had to work last night",* rather than attribute poor performance to their own ability e.g. "*I failed the exam because I did not study"* (Martin et al., 2003). This process not only decreases the likelihood of academic success but also protects one's belief about their academic ability. Students may opt to use behavioural self-handicaps such as "*I failed the exam because I didn't sleep last night"* or claim self-handicaps such as test anxiety, illness, or bad mood. Unlike behavioural self-handicaps, claimed self-handicaps don't necessarily decrease one's chance at success because these claims may be exaggerated or subjective perceptions of their engagement with study, such as a student claiming they did not engage in enough study for an exam but in reality spent each night up until their exam on study (Snyder & Smith, 1982). The use of self-handicapping can be likened to the adoption of a "sick" role as a way of avoiding threats to one academic self-image (Jones & Berglas, 1978).

To date, the majority of self-handicapping research has been interested in the moderating effects of other factors, such as mastery-orientation, anxiety, and academic success; and development of self-handicapping from primary, to secondary school and university (Liem & Martin, 2012). As a result there is extensive evidence that self-handicapping has negative impacts on tertiary student motivation, however

meta-analysis on academic self-handicapping demonstrates the relationship between self-handicapping and academic achievement to be heterogeneous with findings across all education levels ranging from non-significant, to strong negative correlations (Schwinger et al., 2014).

One of the most prominent differences between studies investigating self-handicapping and its relationship with achievement are the questionnaires used. The Academic Self-Handicapping scale (ASHS) (Midgley & Urdan, 1995) and the Self-Handicapping subscale of the Motivation and Engagement scale (Martin, 2009) include questions about the behaviour, the reason for the behaviour and the implementation of the strategy before or after the failure occurs e.g "*I sometimes waste time the night before a test so I have a reason if I don't do well"*. In comparison, items included in the Self-Handicapping Scale (SHS) (Jones & Rhodewalt, 1982) are less consistent, often not addressing the timing of the self-handicapping strategy e.g. "*I tend to do something when I do something wrong".*

Whilst research utilising these scales alone are useful in identifying differences between self-handicapping behaviours, it is not clear to what extent self-handicapping students' influences engagement in a tertiary setting, particularly in support programs designed to reduce maladaptive behaviours and cognitions. Research conducted by Rhodewalt, Saltzman and Wittmer (1984) suggest that engagement patterns differ between low and high self-handicappers, though their research was not focused on tertiary engagement, rather in competitive sports. By measuring both engagement (practice) and self-handicapping the researchers demonstrated that low self-handicappers increased their practice for an important competitive swimming event, whilst high self-handicappers did not. There is some evidence from qualitative studies identifying differences in engagement patterns with

academic supports such as Peer Assisted Learning (PAL) as observed in a study conducted by Wright (2003). Wright's research demonstrated that male non-attenders of PAL used more self-handicapping excuses than those who did attend. An integrated research design which not only measures self-handicapping presence but also assesses other outcome variables such as interest in the content, and use of learning strategies and engagement or attendance with student support programs, may account for the variance in findings related to self-handicapping and academic success (Schwinger et al., 2014).

Heterogeneous findings regarding self-handicapping in a tertiary setting may be also a result of the structure of academic semesters and an incompatible methodological approach taken when collecting data. As detailed previously, self-handicapping is a proactive strategy more likely to be employed by students who are presented with an evaluative situation such as an examination or assessment (Jones & Berglas, 1978). Empirical support for changes in the use of self-handicapping strategies is evident in a study conducted by Eronen, Nurmi and Salmela-Aro (1998) who collected data related to achievement strategies at the start of students' first year of study, and then again two years later. In regards to self-handicapping, Eronen and colleagues (1998) demonstrated that academic achievement and satisfaction was associated changes in the use of self-handicapping strategies. High academic dissatisfaction and low well-being were associated with greater usage of academic self-handicapping strategies at the two year point. Due to the methodological approach employed, with data collection only occurring after two years of study, it is unclear where an intervention may be useful to reduce the presence of self-handicapping behaviours. This methodological approach also disregards time of semester as an independent variable. This is despite the fact perception of student

load may change as semester as progresses due to the increased number of assessments or increased course load and due to difficulty of course material (Ellie, 1992; Sansgiry & Sail, 2006). As assessment of learning occurs in varying amounts across semester, typically with final assessments at the conclusion of semester, it can be predicted that the need for self-handicapping may also vary. Furthermore, students are more likely to use self-handicapping strategies if they perceive an assessment or examination to be important or relevant to them (Sansgiry & Sail, 2006).

Engagement and Intervention Strategies

In order to meet the learning demands from an ever diverse student demographic, tertiary institutions continue to invest resources into the development and facilitation of general and course specific academic supports (Purnell et al., 2010). Institutional support programs, such as Peer Assisted Learning (PAL) or Peer Assisted Study Sessions (PASS), peer mentors, and consultation have been designed to improve student retention and academic success (Dawson et al., 2014, Nelson, Duncan & Clarke, 2009). There is limited scope of research investigating behavioural and cognitive influences, of student attendance to PAL or those who respond to student outreach programs at Australian Universities (Nelson et al., 2009; Dawson et al., 2014; Wright, 2003). Due to the design of these programs and their intended effect on retention and academic success, engagement with these supports needs to be considered and controlled for when investigating tertiary student motivation and academic success.

PASS is offered to specific ‘high-risk’ units where a large proportion of students fail or units which are identified as difficult. Whilst the identification process of high risks course may vary between each institution, commonalities

include a large amount of weekly readings, assessments with large grade weighting, large classes with little opportunity for interaction, high failure rates and absenteeism due to voluntary or unrecorded class attendance (Martin & Arendale, 1993). Within the PASS framework, high-achieving students who have successfully completed targeted courses develop sessions and engage students with course content through the use of interactive activities such as worksheets, group-work, problem-solving exercises, and mock exams (Dawson et al., 2014). When faced with a question or problem, rather than receiving the solution directly from the PASS leaders, students are required to use the resources available and work together to reach a solution. Through this process students not only engage with unit content associated with the PASS session but also develop generic problem solving skills which can be applied to the entirety of degree to improve academic success (Arendale, 2003). PASS is known for utilising simplistic measures of effectiveness with little to no control for other aspects of student motivation related to academic success, such as time spent outside of class, the importance of a unit to obtaining ones degree, social support, orientation to study, task planning and management (Bowles & Jones, 2003-2004). An integrated approach is needed to better understand the behavioural differences in engaging with PASS (Dawson et al., 2014; Gattis, 2002)

Similar to PASS, student mentoring is a student-centred approach designed to improve students' academic performance (Chester, Burton, Xenos & Elgar, 2013). The programme is designed to increase aspects of students' university experience as identified by the five senses of student success: connectedness, culture, resourcefulness, purpose and capability (Lizzio, 2006). Connectedness refers to relationships with peers, academic and professional staff, as well as a sense of belonging to the university. Culture encapsulates the core values and ethical

principles associated with a higher education and is linked closely with dimensions of capability, ones' knowledge and mastery of academic skills, and purpose, engaging with the discipline and creating realistic goals (Fox & Stevenson, 2006). Student mentoring is differentiated from standard tutoring, as rather than teaching specific content student mentors share their experience and address meta-skills such as academic writing, referencing, numeracy skills, study techniques, task management and examination preparation (Husband & Jacobs, 2009). In doing so the program minimalizes surface or shallow approaches to learning and promotes processes involved in strategic and deep learning (Chester et al., 2013).

Alternatively, students have the opportunity to engage with both course academics, such as lecturers, and general academic skills advisers. These programs are not integrated into a particular degree of study but rather available for the entire university population. Despite the fact that this style of student mentoring is common across Australian institutions, there is little evaluation of the effectiveness of the program and no published findings regarding engagement with these programs. Research regarding peer and academic mentoring has often focused on the roles and functions of peer mentors, and students' mentoring experiences (Terrion & Lenoard, 2004) as opposed to understanding patterns of engagement and behavioural, cognitive and logistic barriers that inhibit students from engaging with these support programs.

The Present Study

There is a focus on the motivational aspects of students in a higher education environment and how these factors correlate with academic success. Despite the fact a significant amount of resources are invested in disengagement interventions there is a substantial lack of quantitative research focused on the relationship between

motivational factors and engagement with support programs within the higher education environment. It is imperative that research focus on the longitudinal changes of motivation and engagement over time. The tracking of changes across semester can provide further insight into the behavioural and cognitive students may experience, which in turn can influence the availability of tertiary supports and creation of prevention, intervention and retention strategies to address disengagement. This is particularly important in the face of tertiary sector reform, a reduction of funding, and a loss of both professional and academic roles across Australia.

As a result of tracking engagement with these academic supports across the semester, concurrently with analysing behavioural, cognitive and social changes, policy makers, educators and program coordinators will have the opportunity to gain insight into the factors that contribute to academic success. The following analysis focused on the maladaptive behaviour of academic self-handicapping. Focusing on self-handicapping provides further insight into the dynamic nature of self-handicapping as a protective strategy and as a barrier to engaging with study and student supports across the semester.

The present study adopted a 3-way longitudinal approach in order to investigate changes in self-handicapping at the start semester, during mid-semester and end of semester whilst accounting for other factors that are associated with academic success such as personality, social support, learning style and engagement in additional academic supports (Kahu, 2013). It was hypothesized that there would be a main effect of time (which is an indirect measure of workload which increases over the course of semester), with lower scores of self-handicapping reported at week 2-5 than those reported at week 6-9 and 10-13 respectively. In addition, it was

hypothesized that there would be an interaction between time and student typography, with students whose scores reflected low protective factors (low social support, maladaptive cognitions, shallow-learning style, more emotional reactivity) scoring higher on self-handicapping measures across all time periods than those whose scores reflected high protective factors (high social support, adaptive cognitions, deep-learning and less emotional reactivity). It was further hypothesized that mean reported studying time would be significantly greater for students with low self-handicapping scores than those who reported higher self-handicapping scores.

Further hypotheses were formulated with regards to engagement with support programs. Namely, the study aimed to better understand self-handicapping behaviours and how these may act as a barrier to engagement with academic supports including PASS, Student Learning DropIn, learning skills consultations and lecture consultations. It was hypothesized that students who reported low levels of engagement in student support programs (such as PASS) for units core to their degree would on average report more self-handicapping behaviours than those who engaged with student support programs.

Method

Participants

The sample consisted of 91 students, 74 (81.3%) of whom were female, enrolled in a range of undergraduate courses at the University of Tasmania. Participants' ages ranged from 18 to 64 years (M = 29.8, SD =13.2). A summary of participant demographic factors can be observed in Table 1. In total, participants' study time spent outside of tutorials and lectures ranged from 2 to 60 hours per week

(*M* = 17.9, *SD* = 11.7). Fifty-five students (60%) indicated they were employed, working between 4 to 40 hours per week (*M* = 18.7, *SD* = 12.6)

Table 1

Demographic Characteristics of Participants

Demographic Variable	Category	%	n (*N* = 91)
Citizenship	Australian	81.3	74
	Permanent Resident	8.8	8
	International	9.9	9
Aboriginal	Yes	3.3	88
	No	96.7	3
Age Group	18-21	47.3	43
	22-25	5.5	5
	26-30	9.9	9
	30-34	6.6	6
	35-38	4.4	4
	39-42	6.6	6
	43-46	4.4	4
	47-50	3.3	3
	51-54	7.7	7
	55-58	1.1	1
	59-64	3.3	3
Entry	UPP	6.6	6
	Previous University Study	18.7	17
	MOOC	5.5	5
	TAFE/VET	6.6	6
	International Application	7.7	7
	Secondary Qualification	30.8	28
	Personal Competency Statement	9.9	9
	Secondary Qualification Gap Year	7.7	7
	University College	3.3	3
	Other	3.3	3
Degree	Bachelor of Arts	28.6	26
	Bachelor of Dementia Care	12.1	11
	Bachelor of Behavioural Science	17.6	16
	Bachelor of Biotechnology and Medical Research	1.1	1
	Bachelor of Business	4.4	4
	Bachelor of Engineering	1.1	1
	Bachelor of Health Science	1.1	1
	Bachelor of Law	3.3	3
	Bachelor of Nursing	1.1	1
	Bachelor of Pharmacy	1.1	1
	Bachelor of Psychology with Honours	4.4	4
	Behavioural Science	9.9	9

	Bachelor of Social Science	6.6	6
	Bachelor of Social Work	2.2	2
	Diploma of Teaching (Primary)	1.1	1
	Combined Degree	4.4	4
Study Mode	Distance	16.5	15
	Mixed Mode	26.4	24
	On-Campus	57.1	52
Study Load	Full-Time	73.6	67
	Part-Time	26.4	24
Number of Units	1	5.5	5
	2	17.6	16
	3	23.0	21
	4	51.7	47
	5	2.2	2
	Casual	31.9	29
Employment	Full-Time	7.7	7
	Part-Time	20.9	19
	Unemployed but supported by study allowance	16.5	15
	Unemployed no additional income	23.1	21

Scale Measures

The Motivation and Engagement Scale – University/College (MES-UC).

The MES-UC (Martin, 2009) measures academic and motivation in relation to students' general university study, not to specific classes or topics. It comprises 11 first order factors nested across four higher order factors; adaptive cognitions (self-efficacy, mastery orientation, and valuing), adaptive behaviours (persistence, planning, and task management), maladaptive/impeding cognitions (anxiety, failure avoidance, and uncertainty control) and maladaptive behaviours (self-handicapping and disengagement). Respondents indicated their relative agreement or disagreement to a total of 44 statements on a seven-point Likert scale with end points ranging from *Strongly Disagree* (1) to *Strongly Agree* (7). Examples of these statements can be observed in Table 2. Each of the 11 first order factors are represented by four statements, with a total possible score on each factor ranging from 4 to 28. Higher scores reflect a higher level of the associated cognition or behaviour. Mean

reliability (Cronbach's α) derived from 420 Australian undergraduate students for the 11 subscales was .78 (Martin, 2009). Confirmatory factor analysis in the author's study yielded an excellent fit to the data for both first order and higher order factors. Within the current study, coefficient alpha for the 11 subscales was .76

Table 2

Motivation and Engagement Scale Sample Questions

Dimension	Trait	Example Item
Maladaptive Behaviour	Self-handicapping	*' Sometimes I don't try hard at university so I can have a reason if I don't do well'*
Maladaptive Cognition	Uncertainty-control	'*When I get a bad mark I don't know how to stop that happening next time'*
Adaptive Behaviour	Planning	*'I have a plan for how to do my study or assignments when I start them*
Adaptive Cognition	Valuing	'*I'm able to use some of the things I learn at university in other parts of my life'*

The Big Five Inventory (BFI). The BFI (John, Donahue & Kentle, 1991) multidimensional personality inventory consists of 44-statements which capture aspects of an individual's conscientiousness, extraversion, agreeableness, neuroticism and openness. Respondents indicated their relative agreement or disagreement to statements concerning perceptions of themselves on a five point Likert scale with end-point designators ranging from Strongly Disagree (1) to Strongly Disagree (5). Items include *'Is talkative'* (*extroversion), 'Is helpful and unselfish with others' (conscientiousness),* and *'Can be tense' (neuroticism).* John, Sotto and Naumann (2008) reported that internal consistency for extraversion (.86), agreeableness (.79), consciousness (.82), neuroticism (.87) and

openness (.83) was adequate for all subscales. Internal consistency for the current study of extraversion (.82), agreeableness (.73), consciousness (.79), neuroticism (.88) and openness (.73) was adequate for all subscales

Perceived Social Support from Family and Friends Scale (PSS-Fr & PSS-Fa). The PSS-Fr & PSS-Fa (Procidano & Heller, 1983) is a measure perceived social support from friends (PSS-Fr, 20 items) and family (PSS-Fa, 20 items). It comprises of 40 self-referent statements to which the participant indicate whether they agree, disagree or are neutral. Participants responded to each item by answering 'Yes', 'No' or 'Don't Know'. Items include *'I reply on my friends for emotional support (PSS-Fa)* and *'Members of my family share many of my interest'* Scores range from 0-20 with a '*No'* and *'I don't know'* response scored as zero and '*Yes'* response scored as one. Procidano and Heller (1983) report Cronbach's alpha of .88 for PSS-Fr and .90 for PSS-Fa. Within the current study, coefficient alpha for the PSS-Fr was .83 and .92 for the PSS-Fa.

Approaches and Study Skills Inventory for Students (ASSIST). The ASSIST (Entwistle, 1997) comprises of 52 self-referent statements designed to measure surface, deep and strategic approaches to learning. Respondents indicate their relative agreement or disagreement with statements about their study on a five-point scale with end points ranging from disagree (1) to agree (5). Participants were advised to think in terms of a particular unit/course when answering this scale. Items include '*I usually set out to understand for myself the meaning of what we have to learn' (Deep Approach),' I find I have to concentrate on just memorising a good deal of what I have to learn' (Surface Apathetic Approach),* and *'I organize my study time carefully to make the best use of it' (Strategic).* Mean reliability (Cronbach's α) derived from 817 British undergraduate students for deep (.84), strategic (.80) and

surface (.87) approaches to learning scales were adequate. The mean test-retest correlation value over a one-month period was .79. In the current study the test-retest correlation was reliable for deep (.78), strategic (80), and surface approaches (.83).

Reynolds Short Form of the Marlowe-Crowne Social Desirability Scale (MCSDS) – Short Form C. The MCSDS-Short Form C (Reynolds, 1982) is composed of 13 self-referent statements designed to examine the tendency to respond in a way that is socially desirable. Respondents indicate their agreements or disagreement with statements by responding with either true or false. Items include *'It is sometimes hard for me to go on with my work if I am not encouraged' (Denial),* and *'No matter who I'm talking to, I'm always a good listener' (Attribution).* Mean reliability of Reynolds Short Form derived from a group of 608 undergraduate students demonstrated an acceptable level of reliability ($\alpha = .76$). The product-moment correlation coefficient demonstrated a strong positive correlation between the complete Marlowe-Crone Social Desirability and Reynolds Short Form ($r = .93$)

Procedure

Ethical approval to undertake this study was obtained from the Tasmanian Social Sciences Human Research Ethics Committee (Appendix A). Prior to commencing the online survey participants read an information sheet indicating the voluntary nature of their participation (Appendix B). Consent was implied through submission of the survey. Participants completed the questionnaire package containing the socio-demographic questionnaire (See Appendix C), *Big Five Inventory (BFI), Perceived Social Support from Family and Friends Scale (PSS-Fr & PSS-Fa), Motivation and Engagement Scale – University/College (MES-UC), Approaches to Study Skills Inventory for Students (ASSIST)* and course related questionnaire (Appendix D; Appendix E). The socio-demographic questionnaire

was always the initial item in the package. The order of the BFI, PSS-Fr & PSS-Fa, and the MES-UC were randomized. Participants were then asked to respond to questions related to a unit core to their degree (Appendix D), followed by the ASSIST in which they were instructed to respond to statements in relation to a unit core (high threat) to their degree e.g. LAW121 Foundation of Law for a Bachelor of Law Student. Participants were then asked to respond to questions related to a unit they most enjoyed (low threat)(Appendix E), followed by the ASSIST where they were prompted to respond to statements in relation to the unit they most enjoy. Participants were asked to indicate whether the unit core to their degree was their most enjoyable unit. If the answer was 'yes', participants were then instructed to respond to question regarding the 2nd ranked unit they most enjoy. If the answer was 'no' participants responded to questions about the unit they most enjoyed.

Participants were invited to complete a short follow-up survey between semester weeks 6-9 and 10-13 which contained the *MES-UC, ASSIST* and course related questionnaires. Instructions for completing these questionnaires in relation to core units and enjoyable units remained the same.

Scores from the *BFI, PSS-Fr & PSS-Fa*, *MES-UC,* and *ASSIST* were collated and assessed to categorize students' protective factors. Scores were distributed and quartiles were obtained for each measure. Students who obtained scores within the 75% quartile of factors associated with academic success, such as family support, were scored as high (3) whilst those who scored in the lower 25% quartile were scored as low (1). Students who obtained scores between 26% and 74% were scored as moderate (2). Scoring was reversed for factors negatively associated with academic success e.g. scores within the 75% quartile for the measure neuroticism

were scored as low (1). Scores were then averaged and three defined protective factor groups of low, moderate and high, were obtained.

Data Screening

Participant 30 and 42 were removed due to consistent issues with outliers and large residuals. Moderate (between ±1 - ±0.5) and extreme (greater than ±1) skews were observed for subscales within the MES-UC. Data were not transformed on the basis of two schools of thought. The first indicates that all data must be transformed using the same transformation (Field, 2014). However, varying power transformations must be conducted according to the direction and severity of skew (de Vaus, 2004). As moderate to extreme negative skews were observed for maladaptive behaviours and cognitions, whilst moderate to extreme positive skews were observed for adaptive behaviours and cognitions no single transformation would sufficiently improve the skew of the data. Furthermore there is evidence that despite issues of non-normality, t-tests, analysis of variance and linear regression can be valid in detecting and estimating differences in the means where there are sufficiently large sample sizes ($N \geq 65$) (Lumley, Diehr, Emerson & Chen, 2002).

A significant weak negative association was observed between the MCSDS – Short Form C attribution subscale and self-handicapping scores obtained mid semester (r = -.214, p = .004). No other associations between the MDSDS – Short Form C and self-handicapping subscales were observed.

Results

Differences in Reported Self-Handicapping Behaviour

A three (Time: Start, Mid, and End of Semester) by three (Protective factors: Low, Moderate and High) mixed factor ANOVA was used to assess reported self-handicapping behaviours. Mauchly's test of sphericity was non-significant $\chi^2(2)$ =

1.84, p = .40, W = .979, thus degrees of freedom were not corrected for the within-subject component. Contrary to our predictions, a mixed measures ANOVA revealed no significant within-subject main effect of time on self-handicapping scores, F(2, 172) = 1.25, p = .289, $\eta\rho^2$ = .014, d = .24. Overall, average self-handicapping reported at the start of semester (M = 7.43, SE= .439, *95% CI*[6.56, 8.30]), remained similar to those reported mid (M = 7.87, SE= .436, *95% CI*[7.00,8.73]) and end of semester (M = 8.16, E = .482, *95% CI*[7.20, 9.12]).

Levene's test of homogeneity of variance was violated for self-handicapping scores at start (F = 3.53, p .034), mid (F = 7.49, p < .001), and end (F = 7.42, p <.001) of semester due to unequal sample sizes. Due to the violation of homogeneity of variance Games-Howell post hoc test was conducted to assess differences in reported self-handicapping behaviour between groups. Between-subjects repeated measure ANOVA demonstrated a significant main effect of protective factor on reported self-handicapping behaviour, F(1, 86) = 12.79, p < .001, $\eta\rho^2$ = .842, Cohen's effect size value of .77 suggests there was a moderate to strong effect of protective factor on reported self-handicapping.

Estimated marginal means and confidence intervals for self-handicapping across the varying degree of protective factors were graphed (See Figure 1). Games-Howell comparisons (α = .05) demonstrated that students who exhibited low (p <.001) and moderate levels of protective (p = .001) factors reported significantly higher self-handicapping behaviours across all time periods than those who exhibited high protective factors. No significant differences were observed between low and moderate groups (p = .097).

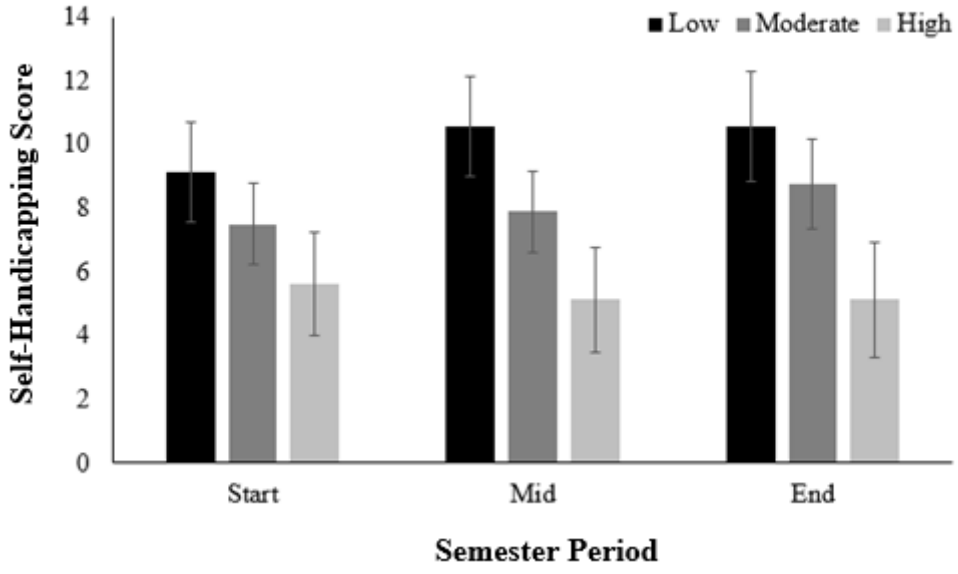

Figure 2. Self-Handicapping behaviours across semester one by level of protective factors

Self-Handicapping and Engagement in Study

A One-Way ANOVA, assuming equal homogeneity of variance (F = .11, p = .893), revealed significant differences between low, moderate and high self-handicappers and reported studying time for core units, $F(2, 88) = 3.75$, p = .028. Cohen's effect size value (d = .58.) suggested a moderate effect of self-handicapping on hours studied.

Bonferroni pairwise comparisons (α = .05) of the degree of self-handicapping demonstrated that high self-handicappers reported significantly lower study time (M = 5.68 hours) than moderate self-handicappers (M = 8.96 hours), p = .042. A trend towards significance was observed for reported study time of high self-handicappers (M = 8.92 hours) in comparison to low self-handicappers (M = 5.68 hours), p = .063.

A One-Way ANOVA, assuming equal homogeneity of variance (F = .36, p = .702), demonstrated no statistically significant differences between self-

handicapping behaviours and reported study times for units participants most enjoyed, $F(2, 88) = .77$, $p = .468$, $d = .26$.

Self-Handicapping and Engagement in Support Programs

PASS attendance to units core to students degree. Participants who did not have access to PASS for their core unit were excluded from the analysis. A total of 34 participants attended PASS ($N = 70$). Levene's test indicated unequal variance of self-handicapping scores ($F = 4.85$, $p = .031$), thus Kruskal-Wallis H test was used to assess whether reported self-handicapping behaviours were different for PASS attendees and non-attendees. Kruskal-Wallis H test demonstrated no statistically differences in overall self-handicapping behaviours of non-attendees and attendees to PASS, $\chi^2(1) = 3.42$, $p = .064$, $d = .45$. Contrary to what was hypothesized, mean rank self-handicapping scores during mid-semester were greater for PASS attendees (Mean Rank = 40.12) and non-attendees (Mean Rank = 31.14).

PASS attendance to units students most enjoyed. Participants who did not have access to PASS for their core unit were excluded from the analysis. A total of 19 participants attended PASS ($N = 57$). A One-Way ANOVAs identified that there were no significant differences in self-handicapping scores of attendees and non-attendees to PASS sessions of units they most enjoyed, $F(1, 56) = .001$, $p = .979$, $d = .01$.

Engagement with supports in relation to core units (DropIn, consultations and skills advisers). A summary of participant engagement can be observed in Table 3. Multiple One-way ANOVAs were used to determine whether there were any differences of reported self-handicapping of students who engaged and did not engage with support services in relation to units core to their degree. Of all the analysis conducted no significant differences between self-handicapping and

engagement with Skills Adviser consultations, $F(1, 88) = .25$, $p = .621$, $d = .10$, Student Learning DropIn, $F(1, 88) = .24$, $p = .628$. $d = .10$ and lecturer consultations $F(1, 88) = 3.03$, $p = .085$, $d = .37$ were observed.

Table 3

Engagement with Academic Supports in Relation to Units Core to a Student's Degree

Support Program	Attended	Never Attended
Skills Advisers	15	74
Student Learning DropIn	13	76
Lecturer Consultations	42	47

Engagement with supports in relation to units student most enjoy (DropIn, consultations and skills advisers). A summary of participant engagement can be observed in Table 4. Multiple One-Way ANOVAs revealed no significance differences between self-handicapping and engagement with Skills Adviser consultations, $F(1, 88) = .19$, $p = .667$, $d = .09$, Student Learning DropIn, $F(1, 88) = .822$, $p = .146$, $d = .19$ and lecturer consultations $F(1, 88) = 1.17$, $p = .282$, $d = .23$ for units student most enjoyed.

Table 4

Engagement with Academic Supports in Relation to Units Students Most Enjoy

Support Program	Attended	Never Attended
Skills Advisers	10	79
Student Learning DropIn	7	82
Lecturer Consultations	31	58

Discussion

Self-handicapping theoretically has been identified as a proactive maladaptive behavioural strategy used to reduce threats to one's perceived scholarly ability (Rhodewalt & Tragakis, 2002). Despite this theoretical grounding, empirical studies have tested self-handicapping behaviour in a tertiary environment without considering the impact of time of semester, changes in perceived student load or perceived importance of the evaluative setting (Schwinger et al., 2014). Accordingly the principle aim of the present study was to assess whether reported self-handicapping behaviour changed as students progressed through their first semester of study and their engagement with academic supports.

Self-Handicapping Prevalence

As assessment of learning occurs in varying amounts across semester, typically with a greater presence of assessments beginning mid semester and culminating at the end of semester, it can be predicted that students' use of self-handicapping may vary according to the load or difficult of course material. It was therefore hypothesized that reported self-handicapping would be lowest at commencement of semester (weeks 2-5), followed by mid semester (weeks 6-9), with highest reported self-handicapping reported at end of semester (weeks 10-13) when load was greatest. Past empirical researchers have also identified the importance of internal (learning approach, adaptive cognitions, maladaptive cognitions, adaptive behaviours, personality traits) and external (social support) factors and their relationship both with self-handicapping and academic success ((Leondari & Gondia, 2007; Rhodewalt & Hill, 1995; Sadler & Buley, 1999; Thomas & Gadbois, 2007). It was further hypothesized that students with low protective factors (factors associated with low academic achievement including low

social support, maladaptive cognitions, shallow-learning style, more emotional reactivity) would report higher self-handicapping across all collection periods in comparison to those with high protective factors (factors associated with high academic achievement such as high social support, adaptive cognitions, deep-learning and less emotional reactivity).

The hypothesis that self-handicapping scores would change over time was not supported. Students reported similar self-handicapping behaviours across all points of semester. Whilst developmental and personality theorists agree that an individuals' academic self-concept develops across the lifespan (c.f. Bong & Skaalvik, 2003) the current findings suggest that at a tertiary level students' use of self-handicapping as a protective strategy is stable within the first semester of study. Poor academic achievement has previously been identified to predict changes in the use of self-handicapping strategies (Eronen, Nurmi and Salmela-Aro 1998). The current study did not capture the final academic milestone associated with the completion of a semester of study (i.e. examinations), which occur outside of the week 2 – 13 data collection period. Future studies should endeavour to include data collection around this final assessment of academic achievement in order to better understand self-handicapping behaviours when threat to one's academic ability may be at its highest.

Despite no changes occurring within a semester of study, there were statistically significant differences between students' self-handicapping scores based on their level of protective factors. Students who reported a greater amount of traits associated with poor academic outcomes reported higher self-handicapping scores than those who reported moderate and low amounts respectively. Together these findings suggest that the presence of self-handicapping behaviour can be established

as early as students first week of study which may be particularly important for institutions that aim to reduce self-handicapping behaviours, excuse making and counterfactual thinking (Thurmer, McCrea & Gollwizer, 2013). Not only can researchers and institutions identify self-handicappers early in semester, high self-handicapping scores were reported by a group with overall low protective factors theoretically associated with low academic achievement. Early intervention may not only reduce self-handicapping behaviours but also prevent the development or heightening of negative cognitive outcomes associated with such as depression, anxiety and low self-esteem in an already at risk group. A modified 6 week cognitive behavioural coaching program involving a non-clinical postgraduate population demonstrated significantly reduced perfectionism, levels of self-handicapping and increased study satisfaction (Kearns et al., 2007). Similar applications at an undergraduate level may not only reduce self-handicapping behaviours but may also be an avenue in connecting students with academic support services such as PASS, student learning DropIn, consultations and learning skills advisers.

Self-Handicapping and Engagement in Study

The findings that high self-handicappers invested significantly less time into study for units core to their degrees in comparison to moderate and low self-handicappers supports the findings of Rhodewalt and colleagues (1984) who noted similar effects in practice time. A trend towards significance was observed between high and low self-handicappers, however there were statistically significant differences between high and moderate self-handicappers. Similar to low self-handicappers, moderate self-handicappers invested almost nine hours of study per week outside of lectures and tutorials for a singular unit. Of dedicated study time, low self-handicappers invested approximately nine hours of study per week outside

of lectures and classes for a singular unit. This time investment into study is congruent with recommended study guidelines detailing students to invest a minimum of two hours for every one hour of classroom time (Baldut, 2009). In contrast, high self-handicappers invested five and a half hours of study per week outside of lectures and classes for a singular unit. This cumulative deficit totals 45.5 hours for the semester, equivalent to just over a full working week (38 hr per week), for a singular unit placing these high self-handicapping students at a significant academic disadvantage to their peers.

In regards to study time invested in units students most enjoyed, no statistical differences were observed between low, moderate and high self-handicappers. Once again, low self-handicappers invested approximately nine hours of study per week outside of lectures and classes for a singular unit. Both moderate and high self-handicappers invested seven hours of study time outside of lectures and classes for the unit they most enjoyed. Whilst still below the recommended nine hours of study, this amount of time spend study is greater for high self-handicappers than the amount of time spent on a unit core to their degree.

The differences between means for units most enjoyed were non-significant, however the average cumulative deficit of 71 hours for both a unit core and most enjoyed, equivalent to approximately two working weeks, is a concern. This deficit may create additional stress and anxiety not only within the semester of study as students attempt to play catch-up and review material, but also impact concepts explored in further study that are covered at a foundation level during students' first year of study. Many students in this study indicated an investment into casual (32%), part-time (21%) and full-time (8%) employment in addition to being enrolled in two

or more units (94.5%) of study and thus it may be unfeasible to recover this lost study time.

Self-Handicapping and Engagement in Support Programs

Preliminary qualitative and quantitative analysis has demonstrated the use of self-handicapping behaviours to excuse students' non-engagement with academic support programs at a secondary level (Shih, 2013). The current study aimed to find quantitative support for these findings demonstrated by Wright (2003) in a tertiary setting. As a result it was initially hypothesized that there would be greater proportion of low self-handicappers attending PASS than high self-handicappers. Although approaching statistical significance (p = .064), no statistical differences between reported self-handicapping and PASS attendance were observed. However, the direction of these means were counterintuitive to those originally hypothesised with students who reported higher self-handicapping scores reported attending more PASS sessions core to their degree than those with lower self-handicapping scores. These findings on the surface level do not support previous qualitative findings where non-attendees reported using more self-handicapping excuses than those who attended (Wright, 2003).

One consideration that should be made is the MES-UC measure used to assess self-handicapping behaviour. Whilst this measure is effective in identifying self-handicapping behaviour, the reason for the behaviour and the implementation of the strategy before or after the failure occurs, it does not distinguish between behavioural self-handicapping and claimed self-handicapping ability (Rhodewalt & Tragakis, 2002). Thus, it is feasible for PASS attendees to report higher claimed self-handicapping as a protective strategy, and not necessarily decrease their academic success and obtain the benefits from attending PASS.

A second consideration to be made are differences in sample. Wright (2003) focused specifically on self-handicapping behaviours in a male population, whilst in this study the majority of participants were female (81%). Previous research has identified that the prevalence of self-handicapping behaviours differ according to gender (Hirt & Kimble, 2005; McCrea, Hirt & Milner, 2008; Meyer, 2000). McCrea and colleagues (2008) demonstrated that women are less likely to use behavioural forms of self-handicapping and were overall more critical of others who placed little or sufficient effort into tasks. It is likely that a primarily female sample in the present study may have influenced the results in relation self-handicapping strategies and engagement with academic supports. As discussed previously, the MES-UC as a measure was limited to identifying the prevalence of self-handicapping behaviour and was unable to distinguish the self-handicapping strategies utilised. Future research should consider the impact of gender and differentiating between claimed and behavioural self-handicapping strategies utilised in engagement or non-engagement with support programs such as PASS.

As expected, there were no statistical differences observed in self-handicapping scores and attendance to PASS for units students' most enjoyed. It is likely that both non-attendees and attendee PASS students felt less anxiety and pressure towards these units of study and thus feel less need to use self-handicapping strategies to protect one's perceived academic ability.

The findings regarding engagement with DropIn, lecture consultations and skills advisers did not support the original hypothesis predicting that low self-handicappers would on average engage more than their high self-handicapping peers. There were no statistical differences between self-handicapping behaviour and

engagement with these support programs both for core units and units students most enjoyed.

Engagement rates were highest for PASS (49%) (core unit), followed my lecture consultations for both core (47%), enjoyable units (35%) and PASS (enjoyable unit) (33%) respectively. Engagement rates for both core and enjoyable units were below 17% for DropIn and consultations. The differences in engagement rates may be a result of divergence in structure where PASS and lecture consultations are focused on developing students' understanding of course content (Dawson et al., 2014), whilst DropIn and Skills Advisers consultations are focused on building study skill applicable to all areas of study (Chester et al., 2013). Whilst there is no empirical evidence that provides further insight into this difference, there are theoretical approaches which provide further insights into the driving forces behind engagement in content versus skills development. Levy and Campbell (2008) indicate that students currently entering tertiary education system are performance-orientated due to their experiences in secondary study and work experiences. As a result, students have difficulty adapting from an extrinsically motivated student, focused on proving their competence, to the intrinsically motivated student who is engaged in the learning process rather than content. This may partially explain the lower engagement rates in supports aimed at developing meta-skills, versus unit-specific knowledge.

Overall, findings demonstrate that self-handicapping behaviour did not impact engagement with support programs for units students most enjoyed, but there is some evidence that reported self-handicapping may impact engagement with PASS for units core to a student's degree. However, the current MES-UC subscale was unable to distinguish the type of self-handicapping strategies PASS attendees

and non-attendees used for units core to their degree. Failing or underperforming in a unit that one must pass to meet degree requirements may be perceived as more threatening than in a unit that students enjoy (low threat). In the context of this study, students who attended PASS may have also engaged in claimed self-handicapping as a protective strategy as a contingency (Hirt, McCrea & Kimble, 2000; Tice, 1991). In the scenario where students failed or underperformed in these units they could protect one's perception of their ability or intelligence.

These preliminary findings are relevant for future qualitative and quantitative studies assessing self-handicapping and engagement not only in support programs but with other engagement both on-campus to classes, lectures and off-campus on on-line learning spaces. It is also imperative that future studies distinguish between the use of self-handicapping strategies in high and low threat academic environments. Despite all these findings engagement with additional supports were low and suggest that there may be other or additional cognitive and behavioural barriers to engagement with academic support programs.

Limitations and Directions for Future Research

Retrospectively from a statistical perspective there were limitations in utilising the MES-UC as a measure of motivation and engagement, and particularly self-handicapping behaviour. The most notable limitation impacting the statistical analysis of self-handicapping and other measures on the MES-UC was the violation of normality. In the present study most maladaptive behaviours and cognitions were moderately to strongly negatively skewed. In contrast, positive behaviours and cognitions were moderately to severely positively skewed. Although varying transformations can be used for issues with skew and kurtosis Field (2014) indicates that only one transformation should be used on all data. Whilst ANOVA and

regression can tolerate non-normal data with only a small effect on the Type I error rate (de Vaus, 2004), it may not be tolerated by more complex statistical analysis. This limitation was not present in the literature with many studies not reporting any issues or interpretation of normality (Marks, 2007; Martin, 2009; Palmer et al., 2011; Wurf & Piggins, 2014). Results of normality tests were not reported in the construct validity studies conducted in both the original motivation and engagement scale (Martin, 2007) and the more specific university/college student scale (Martin, 2008), rather was simply described as reliable and normally distributed.

In regards to the self-handicapping subscale, severe negative skews were observed demonstrating that students overall disagreed with self-handicapping statements e.g. *"Sometimes I don't try hard at university so I can have a reason if I don't do well"*. The high face validity in addition to no reverse scoring of questions may have facilitated students to respond in a socially desirable. There was some evidence of students responding in a socially desirable way during the mid-semester data collection period. As self-handicapping is an impression management strategy, it is evident that students who utilise this strategy may also utilise other impression strategies when self-reporting (Cowman & Ferrari, 2002).

The MES-UC was utilised for its comprehensive measurement of key factors of motivation and engagement in a succinct manner, allowing for the present study to control for these factors. The trade-off however for utilising the self-handicapping scale within the MES-UC was its inability to distinguish claimed from behavioural self-handicapping. An ideal scale would be able to identify whether self-handicapping behaviours occur before or after the failure occurs questioning as the MES-UC does and also distinguishes claimed from behavioural self-handicapping. Whilst the Self-Handicapping (Jones & Rhodewalt, 1982) scale is less consistent,

often not addressing the timing of the self-handicapping strategy, it readily distinguishes claimed and behavioural self-handicapping. Taking into consideration issues with normality, social desirability and this weakness the use of other self-handicapping measure may better identify self-handicapping behaviour in tertiary students. Specifically the use of the SHS (Jones & Rhodewalt, 1982), The ASHS (Midgley & Urdan, 1995) and the use of the 10 subscales to control for key factors related to motivation and engagement may be the ideal approach for future research.

Due to time and resource constraints participants were mainly female, domestic students enrolled in psychology units. As there are findings indicating differences in the use of self-handicapping strategies between male and female students the current findings should be interpreted with some caution (McCrea et al., 2008). Other issues regarding sampling and the longitudinal design should also be considered. Specifically data analysis was only conducted on responses collected at all three collection periods in which students self-selected their participation. It is feasible that students already engaged or motivated completed the survey in a timely manner and completed all three collection period and thus the results may not be truly representative to all students who are disengage or unmotivated. A controlled study integrated into students' first year experience may be an effective design for future research to consider to avoid this bias.

Given the stable nature of self-handicapping across the semester of study it would be worthwhile implementing an intervention to reduce self-handicapping behaviours early in semester (Kearns et al., 2007). As high self-handicappers reported overall lower hours invested in study outside of assigned lectures and classes, an early intervention may reduce the overall deficit in time spent studying.

Conclusion

Academic self-handicapping has been previously documented to be strongly correlated with disengagement from learning, poor adjustment and academic behaviour. The results of the present study indicate that self-handicapping strategies were stable within a semester of study. These consistently high self-handicapping students invested less time in personal study, with an average accumulative deficit of 71 hours for both units core and most enjoyed. From an institutional and research perspective, the current findings suggest self-handicapping behaviour can be identified and targeted in much the same way demographic factors are identified and targeted to reduce disengagement, reinforce minimum hours required for study and facilitate positive transitions to university as there were observed differences in reported self-handicapping behaviours between students who were identified to have low protective factors (traits associated with poor academic success) and high protective factors (traits associated with academic success). There is evidence that university resources should be directed towards supports and interventions implemented early within the first semester of study.

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Appendix A

Tasmanian Social Sciences Human Research Ethics Committee Approval

Social Science Ethics Officer
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HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

UTAS

3 March 2015

Dr Kimberley Norris
Psychology
Private Bag 30

Student Researcher: Kayla Chakouch

Sent via email

Dear Dr Norris

Re: MINIMAL RISK ETHICS APPLICATION APPROVAL
Ethics Ref: **H0014730 - An analysis of university student motivation and engagement over the course of one-year of study**

We are pleased to advise that acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 25 February 2015.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approval of other bodies or authorities is required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

Please note that this approval is for four years and is conditional upon receipt of an annual Progress Report. Ethics approval for this project will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by these conditions may result in suspension or discontinuation of approval.

1. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval, to ensure the project is conducted as approved by the Ethics Committee, and to notify the Committee if any investigators are added to, or cease involvement with, the project.

2. Complaints: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or human.ethics@utas.edu.au.

3. Incidents or adverse effects: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. Amendments to Project: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.

5. Annual Report: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**

6. Final Report: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw
Executive Officer
Tasmania Social Sciences HREC

Appendix B

Participant Information Sheet

An Analysis of University Student Motivation and Engagement over the Course of One-Year of Study

1. **Invitation**

Thank you for your interest in this research. This study is being conducted in partial fulfilment of a Psychology Honours degree for Kayla Chakouch under the supervision of Dr Kimberley Norris at the University of Tasmania. Co-investigators from Student Learning and Development include Sally Fuglsang and Julia Carew. Please take your time to read this information sheet to gain a better understanding of the research task and what it will involve. Before you decide to participate is it important you understand all the information below. If you have any further questions or would like more information please contact the researchers at kaylac@utas.edu.au (Kayla Chakouch) or Kimberley.Norris@utas.edu.au (Kimberley Norris).

2. **What is the purpose of this study?**

The study aims to better understand the factors that may influence student motivation and engagement at key points across the semester. In doing so, we hope to improve our understanding of demographic, behavioural and cognitive differences of students enrolled at the University of Tasmania. The results from this study will be used to inform support and intervention programs, such as the Peer Assisted Study Program and Student Engagement, to ensure that these programs are meeting students' study needs across the semester.

3. **What will I be asked to do?**

As a participant you will be asked to respond to questions via an online survey in regards to the university subject you enjoy most and a unit that is core (i.e. compulsory) for your degree. You will be asked to answer these questions at three time points over the semester: between weeks 1-4, 5-8 and 9-13.

Reminders will be sent via public notice boards (such as MyLO), in targeted lectures and tutorials and on posters placed around campus. By submitting a completed survey, you are saying you have reviewed the information sheet and agreeing to participate.

4. Are there any possible benefits from participation in this study?

Your participation will assist us to better understand motivational and study processes across your semester of study. The results from this study will promote further research and will provide value information educational professionals and researchers working with a variety of students.

You may enter a prize draw to win one of four $50 Coles/Myer gift cards, or if you are a first-year Psychology student at UTAS, obtain 1 ½ hours of research credit on completing the three 30-minute surveys. If you do not complete all three surveys, you will receive 30 minutes research credit for each survey that you do complete.

5. Are there any possible risks from participation in this study?

This study involves no more than minimal risk (i.e. risks encountered in daily life) and no specific risk is anticipated with taking part in this study. No deception is involved in this study. At any time should you feel uncomfortable or upset completing the survey, please stop the survey. If however you do experience some distress upon completion we encourage you to contact support and counselling services available through Lifeline: 13 11 44, or BeyondBlue: 1300 22 4636.

6. **What if I change my mind during or after the study?**

Your involvement in the study is completely voluntary and you are able to withdraw and withdraw your data at any time prior to submission without negative consequence. Please note that after you have submitted your survey we will not be able to remove your data from the data-set as there is no way of knowing which response belong to you.

7. **Anonymity**

The online questionnaire will be administered using 'Lime Survey' software utilising 'SSL' encryption to protect any data collected. Web-based survey anonymity cannot be guaranteed due to your IP address, however it is possible to switch off the function that saves the IP address and make it untraceable.

When completing this survey, your responses will be assigned with a "Token", a unique code associated with your login to ensure your anonymity.

8. **What will happen to the information when this study is over?**

The data relating to the study will be encrypted and stored in a secure, password-protected electronic database on the University of Tasmania, School of Medicine (Psychology) premises. Your name will not be recorded or associated with any experimental data.

The research data will be stored for the minimum of five years. After five years from the date of the first publication all data will be deleted within the formal guideline of the University of Tasmania' data destruction processes.

9. **How will the results of the study be published?**

The findings of this study will be available at the University of Tasmania website http://www.utas.edu.au/psychology/ or can be requested via email. For further information please contact Kayla Chakouch at email kaylac@utas.edu.au.

All results will be non-identifiable, which means that only group-level data will be reported and there is no way by which your own responses can be identified.

10. What if I have questions about this study?

If you have any further questions about this study, please contact Kayla Chakouch (student researcher) at kaylac@utas.edu.au or Kimberley Norris (Chief Investigator) at Kimberely.Norris@utas.edu.au.

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number H14730.

Thank you for your time taken reading this information sheet.

If you are still interested in participating in this study, please click “Next’

Appendix C

Demographic Questionnaire

The following demographic questions are related to you and your study at university

1. **Age (Open Answer)**
2. **Sex:**
    - Male
    - Female
3. **Citizenship:**
    - Australian Citizenship
    - International
    - Permanent Resident
    - Humanitarian Visa
4. **Are you of Aboriginal or Torres Strait Islander Origin**
    - Yes, I am of Aboriginal Origin
    - Yes, I am of Torres Strait Islander Origin
    - Yes, I am both of Aboriginal and Torres Strait Islander Origin
    - No, I am not of Aboriginal or Torres Strait Islander Origin
5. **Entry Pathway (Open Answer)**
    - Secondary Qualification (ATAR) – Directly from high school
    - Secondary Qualification (ATAR) – Following a gap year
    - University College Program
    - University Preparation/Enabling Program
    - TAFE/VET Completion (Cert III)
    - Previous University Study
    - International Application
    - Personal Competency Statement
    - Aptitude Test
    - Other (Open Answer)

5b) ATAR Score (Open Answer)

6. **Degree Title (e.g. Bachelor of Arts; Open Answer)**
7. **Study Load**
    - Full-time
    - Part-Time
8. **How many units are you enrolled in this semester?**
    - 1
    - 2
    - 3
    - 4
    - 5

8b) Average hours spent each week on study outside of tutorials/lectures: (Open Answer)

9. **Study Mode**
    - On-campus
    - Distance

- Mixed Mode

10. Employment

- Full Time
- Part-time
- Casual
- Unemployed but supported by study allowance
- Unemployed no additional income

8 b) Average work hours per week: (Open Answer }

Appendix D

Core Subject Questions

The following questions are related to the university subject that is core (i.e. compulsory) to your degree. For example, if you are completing a Bachelor of Law, LAW121- Introduction to Law would be considered a core subject to your degree.

1. **Subject Title: (Open Answer)**
2. **Subject Code: (Open Answer)**
3. **Average hours per week spent on study outside tutorials/lectures: (Open Answer)**
4. **(Weeks 6-9 & Weeks 10-13) Has your core subject changed since you completed this survey during weeks 2-5/6-9?**
    a. Yes
    b. No

    4b) Why has your core subject changed? (Open Answer)

5. **Please select the statement that most accurately reflects your level of enjoyment with this subject.**
    a. I thoroughly enjoy this subject
    b. I somewhat enjoy this subject
    c. I neither dislike or like this subject
    d. I somewhat dislike this subject
    e. I strongly dislike this subject

6. **Have you attended Peer Assisted Study Sessions (PASS) for this subject?**
    a. Yes
    b. No
    c. PASS is not offered for this subject

    5b) How many PASS sessions have you attended for this unit (Open Answer)
7. **Have you visited Student Learning DropIn with a question related to this subject?**
    a. Yes
    b. No
8. **Have you attended a Student Learning Consultation for assistance in this subject?**
    a. Yes
    b. No
9. **Have you visited a lecturer and/or teaching staff during their consultations hours for this subject?**
    a. Yes
    b. No
10. **Have you been contacted by student success in relation to this subject?**
    a. Yes
    b. No

11. What is your <u>expected</u> average grade for this subject?

a. NN
b. PP
c. CR
d. DN
e. HD

12. (Weeks 6-9 & Weeks 10-13 only) At this point in time, what is your average grade for this subject?

a. NN
b. PP
c. CR
d. DN
e. HD
f. I have not received any marks for this subject

Appendix E

Most Enjoyable Subject Questions

The following questions are related to the university subject you enjoy the most.

Is your core unit the subject you enjoy the most?

a. Yes
b. No

If you answered yes to the question above, please complete the following in relation to the second subject you enjoy the most.
If you answered no to the question above, please complete the following in relation to the subject you enjoy the most.

2. **Subject Title: (Open Answer)**
3. **Subject Code: (Open Answer)**
4. **Average hours per week on study outside tutorials/lectures: (Open Answer)**
5. **(Weeks 6-9 & 10-13) Has the subject you most enjoy changed since you completed this survey during weeks 2-5/6-9?**
    a. Yes
    b. No

5b) Why has your subject preference changed? (Open Answer)

6. **Please select the statement that most accurately reflects your level of enjoyment with this subject.**
    a. I thoroughly enjoy this subject
    b. I somewhat enjoy this subject
    c. I neither dislike or like this subject
    d. I somewhat dislike this subject
    e. I strongly dislike this subject

7. **Have you attended Peer Assisted Study Sessions (PASS) for this subject?**
    a. Yes
    b. No
    c. PASS is not offered for this subject

    5b) How many PASS sessions have you attended for this subject (Open Entry)

8. **Have you visited Student Learning DropIn with a question related to this subject?**
    a. Yes
    b. No
9. **Have you attended a student learning consultation for assistance in this subject?**
    a. Yes
    b. No
10. **Have you visited a lecturer and/or teaching staff during their consultations hours for this subject?**

a. Yes
b. No

11. Have you been contacted by student success in relation to this subject?

a. Yes
b. No

12. What is your expected average grade for this subject?

a. NN(<49)
b. PP (50-59)
c. CR (60-69)
d. DN (70-79)
e. HD (80+)

13. (Weeks 6-9 & Weeks 10-13 only) At this point in time, what is your average grade for this subject?

a. NN(<49)
b. PP (50-59)
c. CR (60-69)
d. DN (70-79)
e. HD (80+)
f. I have not received any marks for this subject

Appendix F

SPPS Output

H1 & H2 - Differences in Reported Self-Handicapping Behaviour

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
selfhandicappin	.979	1.843	2	.398	.979	1.000	.500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + Protective_MES10inc

Within Subjects Design: selfhandicappin

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
T1_SelfHandicapping	3.530	2	86	.034
T2_SelfHandicapping	7.499	2	86	.001
T3_SelfHandicapping	7.423	2	86	.001

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Protective_MES10inc

Within Subjects Design: selfhandicappin

Descriptive Statistics

	Protective_MES10inc	Mean	Std. Deviation	N
T1_SelfHandicapping	Low	9.15	4.789	26
	Moderate	7.51	4.346	39
	High	5.63	2.261	24
	Total	7.48	4.216	89
T2_SelfHandicapping	Low	10.58	4.989	26
	Moderate	7.90	4.083	39
	High	5.13	2.401	24
	Total	7.93	4.472	89
T3_SelfHandicapping	Low	10.58	5.558	26
	Moderate	8.77	4.451	39
	High	5.13	2.755	24
	Total	8.31	4.868	89

4. Protective_MES10inc * selfhandicappin

Measure: MEASURE_1

Protective_MES10inc	selfhandicappin	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Low	1	9.154	.794	7.576	10.732
	2	10.577	.788	9.010	12.143
	3	10.577	.872	8.844	12.310
Moderate	1	7.513	.648	6.224	8.801
	2	7.897	.643	6.618	9.177
	3	8.769	.712	7.354	10.184
High	1	5.625	.826	3.983	7.267
	2	5.125	.820	3.494	6.756
	3	5.125	.908	3.321	6.929

Tests of Within-Subjects Effects

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
selfhandicappin	Sphericity Assumed	22.755	2	11.377	1.249	.289	.014	2.497	.269
	Greenhouse-Geisser	22.755	1.958	11.621	1.249	.289	.014	2.445	.266
	Huynh-Feldt	22.755	2.000	11.377	1.249	.289	.014	2.497	.269
	Lower-bound	22.755	1.000	22.755	1.249	.267	.014	1.249	.197
selfhandicappin * Protective_MES10inc	Sphericity Assumed	40.596	4	10.149	1.114	.352	.025	4.455	.346
	Greenhouse-Geisser	40.596	3.916	10.367	1.114	.351	.025	4.362	.342
	Huynh-Feldt	40.596	4.000	10.149	1.114	.352	.025	4.455	.346
	Lower-bound	40.596	2.000	20.298	1.114	.333	.025	2.228	.240
Error(selfhandicappin)	Sphericity Assumed	1567.239	172	9.112					
	Greenhouse-Geisser	1567.239	168.388	9.307					
	Huynh-Feldt	1567.239	172.000	9.112					
	Lower-bound	1567.239	86.000	18.224					

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Intercept	15602.636	1	15602.636	457.966	.000	.842	457.966	1.000
Protective_MES10inc	871.207	2	435.604	12.786	.000	.229	25.572	.996
Error	2929.969	86	34.069					

a. Computed using alpha = .05

Multiple Comparisons

Measure: MEASURE_1

Games-Howell

(I) Protective_MES10inc	(J) Protective_MES10inc	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low	Moderate	2.04	.966	.097	-.29	4.38
	High	4.81*	.902	.000	2.61	7.01
Moderate	Low	-2.04	.966	.097	-4.38	.29
	High	2.77*	.714	.001	1.05	4.48
High	Low	-4.81*	.902	.000	-7.01	-2.61
	Moderate	-2.77*	.714	.001	-4.48	-1.05

Based on observed means.

The error term is Mean Square(Error) = 11.356.

*. The mean difference is significant at the .05 level.

H3a – Self-Handicapping & Engagement in Study (Core)

Test of Homogeneity of Variances

StudyHours_Average_Core

Levene Statistic	df1	df2	Sig.
.114	2	86	.893

ANOVA

StudyHours_Average_Core

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	181.095	2	90.548	3.747	.028
Within Groups	2078.061	86	24.163		
Total	2259.156	88			

Descriptives

StudyHours_Average_Core

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Low		27	8.9630	4.56233	.87802	7.1582	10.7678	2.00	21.67	
Moderate		39	8.9231	5.75852	.92210	7.0564	10.7898	2.00	37.67	
High		23	5.6812	3.54691	.73958	4.1474	7.2150	.67	13.67	
Total		89	8.0974	5.06678	.53708	7.0301	9.1647	.67	37.67	
Model	Fixed Effects			4.91564	.52106	7.0616	9.1332			
	Random Effects				1.03814	3.6306	12.5641			2.29801

Multiple Comparisons

Dependent Variable: StudyHours_Average_Core

Bonferroni

(I) SelfHandicapping	(J) SelfHandicapping	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low	Moderate	.03989	1.23066	1.000	-2.9650	3.0448
	High	3.28180	1.39482	.063	-.1239	6.6876
Moderate	Low	-.03989	1.23066	1.000	-3.0448	2.9650
	High	3.24192*	1.29235	.042	.0864	6.3975
High	Low	-3.28180	1.39482	.063	-6.6876	.1239
	Moderate	-3.24192*	1.29235	.042	-6.3975	-.0864

. The mean difference is significant at the 0.05 level.

H3b – Self-Handicapping & Engagement in Study (Enjoy)

Test of Homogeneity of Variances

HoursStudied_Enjoy

Levene Statistic	df1	df2	Sig.
.355	2	86	.702

Descriptives

HoursStudied_Enjoy

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Low		27	8.728	6.8125	1.3111	6.033	11.423	2.0	35.7	
Moderate		39	7.128	4.4908	.7191	5.672	8.584	.0	18.3	
High		23	7.159	5.6209	1.1720	4.729	9.590	1.3	30.0	
Total		89	7.622	5.5551	.5888	6.452	8.792	.0	35.7	
Model	Fixed Effects			5.5700	.5904	6.448	8.795			
	Random Effects				.5904[a]	5.081[a]	10.162[a]			-.2521

ANOVA

HoursStudied_Enjoy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.482	2	23.741	.765	.468
Within Groups	2668.116	86	31.025		
Total	2715.598	88			

Multiple Comparisons

Dependent Variable: HoursStudied_Enjoy

Bonferroni

(I) SelfHandicapping	(J) SelfHandicapping	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low	Moderate	1.6002	1.3945	.763	-1.805	5.005
	High	1.5690	1.5805	.971	-2.290	5.428
Moderate	Low	-1.6002	1.3945	.763	-5.005	1.805
	High	-.0312	1.4644	1.000	-3.607	3.544
High	Low	-1.5690	1.5805	.971	-5.428	2.290
	Moderate	.0312	1.4644	1.000	-3.544	3.607

H4a – PASS attendance to units core to students degree

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
SelfHandicapping_Average	70	7.9381	3.87165	4.00	20.67	5.0000	6.6667	9.5000
Attended_PASSCore	70	.49	.503	0	1	.00	.00	1.00

Ranks

	Attended_PASSCore	N	Mean Rank
SelfHandicapping_Average	No	36	31.14
	Yes	34	40.12
	Total	70	

Test Statistics[a,b]

	SelfHandicapping_Average
Chi-Square	3.418
df	1
Asymp. Sig.	.064

a. Kruskal Wallis Test

b. Grouping Variable: Attended_PASSCore

H4b – PASS attendance to units students most enjoyed.

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
.285	1	55	.596

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
No		38	7.6930	3.77313	.61208	6.4528	8.9332	4.00	20.67	
Yes		19	7.6667	3.23942	.74317	6.1053	9.2280	4.00	14.67	
Total		57	7.6842	3.57484	.47350	6.7357	8.6327	4.00	20.67	
Model	Fixed Effects			3.60717	.47778	6.7267	8.6417			
	Random Effects				.47778[a]	1.6134[a]	13.7550[a]			-.51327

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.009	1	.009	.001	.979
Within Groups	715.640	55	13.012		
Total	715.649	56			

H5a - Engagement with supports in relation to core units (DropIn, consultations and skills advisers).

Lecture Consultations

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
1.536	1	87	.219

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		47	7.2553	3.52850	.51468	6.2193	8.2913	4.00	20.00	
Attended		42	8.6429	3.98669	.61516	7.4005	9.8852	4.00	20.67	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.75141	.39765	7.1197	8.7005			
	Random Effects				.69414	-.9098	16.7300			.64538

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	42.702	1	42.702	3.034	.085
Within Groups	1224.357	87	14.073		
Total	1267.059	88			

Learning Skills Advisers

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
.351	1	87	.555

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		74	7.8198	3.77373	.43869	6.9455	8.6941	4.00	20.67	
Attended		15	8.3556	3.99894	1.03252	6.1410	10.5701	4.00	15.33	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.81087	.40395	7.1072	8.7130			
	Random Effects				.40395[a]	2.7774[a]	13.0428[a]			-.43871

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.580	1	3.580	.246	.621
Within Groups	1263.479	87	14.523		
Total	1267.059	88			

Student Learning DropIn

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
.111	1	87	.740

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		76	7.8289	3.78515	.43419	6.9640	8.6939	4.00	20.67	
Attended		13	8.3846	3.96943	1.10092	5.9859	10.7833	4.00	15.33	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.81110	.40398	7.1072	8.7131			
	Random Effects				.40398[a]	2.7771[a]	13.0431[a]			-.49981

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.428	1	3.428	.236	.628
Within Groups	1263.631	87	14.524		
Total	1267.059	88			

H5a - Engagement with supports in relation to enjoyable units (DropIn, consultations and skills advisers).

Lecture Consultations

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
.018	1	87	.892

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		58	7.5920	3.88381	.50997	6.5708	8.6132	4.00	20.67	
Attended		31	8.5054	3.60747	.64792	7.1821	9.8286	4.00	14.67	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.79080	.40182	7.1114	8.7088			
	Random Effects				.44164	2.2985	13.5217			.06151

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.856	1	16.856	1.173	.282
Within Groups	1250.203	87	14.370		
Total	1267.059	88			

Learning Skills Advisers

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
.781	1	87	.379

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		79	7.8481	3.76927	.42408	7.0038	8.6924	4.00	20.67	
Attended		10	8.4000	4.16570	1.31731	5.4200	11.3800	4.00	13.67	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.81219	.40409	7.1069	8.7133			
	Random Effects				.40409[a]	2.7756[a]	13.0446[a]			-.66632

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.704	1	2.704	.186	.667
Within Groups	1264.355	87	14.533		
Total	1267.059	88			

Student Learning DropIn

Test of Homogeneity of Variances

SelfHandicapping_Average

Levene Statistic	df1	df2	Sig.
2.432	1	87	.123

Descriptives

SelfHandicapping_Average

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Never attended		82	8.0813	3.83277	.42326	7.2391	8.9235	4.00	20.67	
Attended		7	5.9048	2.78697	1.05338	3.3272	8.4823	4.00	12.00	
Total		89	7.9101	3.79452	.40222	7.1108	8.7094	4.00	20.67	
Model	Fixed Effects			3.76997	.39962	7.1158	8.7044			
	Random Effects				1.11485	-6.2554	22.0757			1.26680

ANOVA

SelfHandicapping_Average

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.553	1	30.553	2.150	.146
Within Groups	1236.506	87	14.213		
Total	1267.059	88			